Udell Dental Laboratory can 3D print models like this in clear bio-compatible material, which costs less than 25 percent of Udell's previous 3D printing material.

Bridging Dental Costs

Market Advancement Requires an Advanced Lab

Udell Dental Laboratory (Udell), a full-service dental lab, has been providing high-quality restorations and services to dentists for more than 60 years. With demand increasing for accurate appliances fast, Udell realized traditional methods were no longer helping them uphold their long tradition of excellence.

> "The time required to print a typical removable partial dental frame is reduced by 80 percent, which makes it possible to complete the partial denture framework in a day and a half."
>
> Scott Udell
> President, Udell Dental Laboratory

stratasys

Bridging Dental Costs

Traditional Methods Slow Down Production

For Udell, using the traditional manual approach to make removable partial denture frames (RPD) took many steps and was not efficient enough to meet increasing demand. The traditional process required 96 minutes of work by a dental technician and was highly dependent on their skill and attentiveness to ensure an accurate fit.

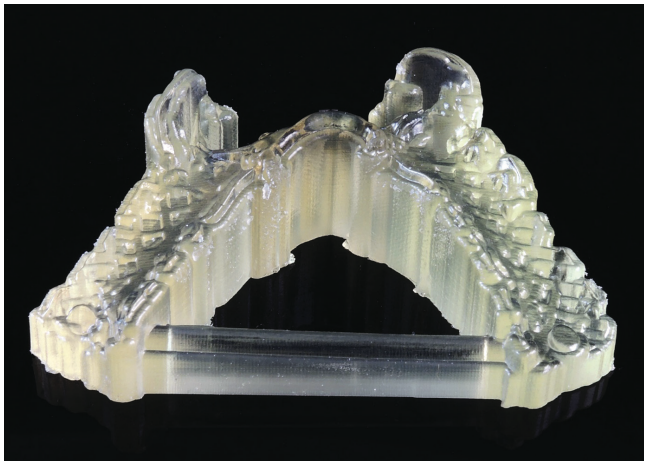
Using an impression taken by a dentist of the patient's mouth, a skilled technician pours the stone model and then duplicates it into a refractory model that becomes part of the mold used to cast the metal RPD framework. The technician designs a wax pattern to the refractory model that defines the geometry of the RPD and fills in undercuts in the gums to provide a smooth path for RPD placement.

Sprues are attached to the wax pattern and refractory model, and the assembly is placed in an investment ring. Silica casting investment is poured into the ring to create a mold for investment casting. Molten metal is cast into the mold through the sprues, replacing the wax pattern. When the metal cools, the refractory and silica investment are removed to reveal the finished frame.

Dental Lab Reduces Material Cost by 80%

Several years ago, Udell switched to digital technology to make RPDs, shaving 20 minutes off this step compared to traditional approach. This faster approach begins with taking a 3D laser scan of the stone model. The technician works with special software to define the geometry of the frame. The software provides automated tools to ensure an accurate fit, such as automatically calculating the path of insertion for the RPDs and highlighting any interference. This approach reduces the time required for this step from 20 minutes with the traditional approach to one minute. The technician uses a 3D printer to create an RPD pattern for investment casting. The pattern is sprued, invested, cast and finished the same as the traditional method.

This digital method takes only 65 minutes to produce a complete RPD. The new method saves the dentist additional time in fitting the RPD because its accuracy is much higher. If a remake is required, modifications can be quickly made to the digital file and reprinted instead of having to hand wax again from scratch.



A complete model, like this frame with the support material intact, takes only 65 minutes via the digital method, compared to two days with traditional methods.

> "We also print denture try-ins and models for night guards. Our total material savings are about $3,500 per month.
>
> Scott Udell
> President, Udell Dental Laboratory

Finished parts, like this polished alloy frame, have higher accuracy using the digital method.

Bridging Dental Costs

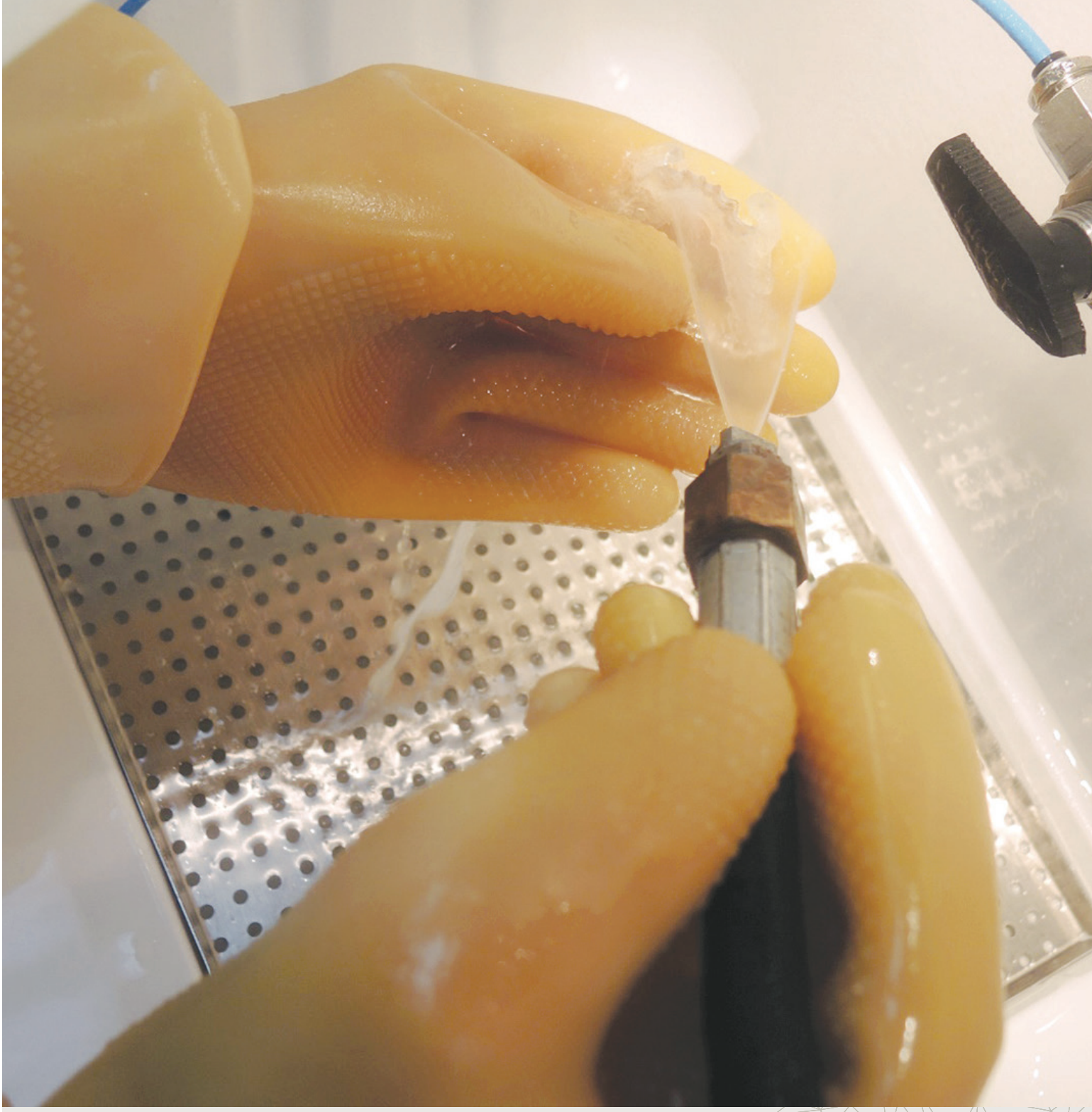
The 3D printer that Udell first used required material that cost averaged $12 for each RPD pattern and took 12 hours to print the pattern. Turnaround time was three days. Looking to improve these numbers, Udell decided to compare the Stratasys line of 3D printers against its current system.

Scott Udell, president of Udell Dental Laboratory, said that the Objet Eden260V Dental Advantage™ 3D Printer "offers major advantages over the 3D printer that we used in the past." The bio-compatible material used by the Dental Advantage averages $2.84 per RPD, which is less than 25 percent of the cost per frame from the company's previous 3D printer.

"We also print denture try-ins and models for night guards. Our total material savings are about $3,500 per month."

	Material Cost Per Rpd*	Time To Produce Rpd*
Previous 3D printing method	$12	3 Days
Objet Eden260V	$2.84	1.5 Days
Savings over previous 3D printing method	76% Cost Savings	50% Time Savings

*Removable partial denture (RPD)



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